

REMARKS

This is a full and timely response to the non-final Official Action mailed **November 28, 2003** (Paper No. 5). Reconsideration of the application in light of the above amendments and the following remarks is respectfully requested.

Claims 1, 10 and 22 are amended herein. No claims are cancelled, and new claims 28 and 29 have been added. Thus, claims 1-29 are currently pending for further consideration.

In the outstanding Office Action, the Examiner indicated the allowance of claims 7-9 and 15-17. Applicant wishes to thank the Examiner for the allowance of these claims. The Examiner further indicated the presence of allowable subject matter in claims 2, 3, 11, 12, 19-21, 23 and 24. Again, Applicant wishes to thank the Examiner for this identification of allowable subject matter. New claim 28 corresponds to claim 2 in independent form. New claim 29 corresponds to claim 3 in independent form. Thus, claims 28 and 29 should be in condition for immediate allowance based on the Examiner's determination of allowable subject matter.

With regard to the prior art, claims 1, 4, 10, 22 and 25 were rejected as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of U.S. Patent No. 5,162,787 to Thompson et al. ("Thompson") and U.S. Patent No. 6,050,690 to Shaffer et al. ("Shaffer"). For at least the following reasons, this rejection is respectfully traversed.

Claim 1 recites:

A volumetric three dimensional display device with an interactive pointer, the device comprising:

a rotating helical display screen that sweeps out a cylindrical three-dimensional display space;

a projector for projecting two-dimensional slices of a three-dimensional data set on said rotating helical display screen so as to generate a three-dimensional volumetric display on said rotating helical display screen; and

a laser pointer generating a continuously pulsed laser beam.

(emphasis added).

Similarly, independent claim 10 recites:

A method of providing a volumetric three dimensional display device with an interactive pointer, the method comprising the steps of:

rotating a helical display screen that sweeps out a cylindrical three-dimensional display space;

projecting two-dimensional slices of a three-dimensional data set on said rotating helical display screen so as to generate a three-dimensional volumetric display on said rotating helical display screen; and

generating a continuously pulsed laser beam on a laser pointer.

(emphasis added).

Independent claim 22 recites:

A volumetric three dimensional display device with an interactive pointer, the device comprising:

a rotating helical display screen that sweeps out a cylindrical three-dimensional display space;

a projector for projecting two-dimensional slices of a three-dimensional data set on said rotating helical display screen so as to generate a three-dimensional volumetric display on said rotating helical display screen; and

a hand-held laser pointer generating a continuously pulsed laser beam which a user directs at said rotating display screen to selectively indicate a point on the three-dimensional volumetric display.

(emphasis added).

In contrast, the combination of Thompson and Shaffer fails to teach or suggest the “continuously pulsed laser beam” as claimed. Shaffer teaches that the user “activates a

momentary push-button switch (not shown) on the light device 12 to create a light pulse. The push-button switch toggles the light beam on and off for a brief, predetermined time period.” (Col. 8, lines 42-47). Thus, Shaffer does not teach or suggest a laser beam from a laser pointer that is continuously pulsed when the light device is in operation as claimed.

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Therefore, the rejection of claims 1, 4-6, 10, 13 and 14 based on Thompson and Shaffer should be reconsidered and withdrawn.

Claim 18 was rejected as being anticipated under 35 U.S.C. § 102(e) by U.S. Patent No. 6,302,542 to Tsao ("Tsao"). For at least the following reasons, this rejection is respectfully traversed.

Claim 18 recites:

A method of providing a volumetric three-dimensional display device, comprising the steps of:
rotating a helical display screen that sweeps out a cylindrical three-dimensional display space;
projecting two-dimensional slices of a three-dimensional data set on said rotating helical screen so as to generate a three-dimensional volumetric display on said screen;
selectively projecting a two-dimensional image that is superimposed on said three-dimensional volumetric display, wherein said selective projection of said two-dimensional image is synchronized with rotation of said rotating helical display screen.

It is important to note that claim 18 recites a set of two-dimensional images (slices of a three-dimensional data set) that are projected on a rotating helical screen to generate a three-

dimensional display. In addition, claim 18 recites another, separate two-dimensional image “that is superimposed on said three-dimensional volumetric display.”

The additional two-dimensional image can be superimposed on the three-dimensional image because the selective projection of said two-dimensional image is synchronized with rotation of said rotating helical display screen. Consequently, the additional two-dimensional image is projected only when the rotating screen is in a particular position. Consequently, the two-dimensional image is superimposed over the three-dimensional image being displayed.

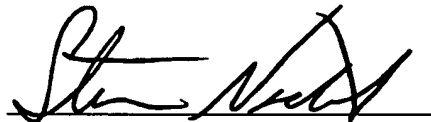
In contrast, Tsao fails to teach or suggest the claimed “two-dimensional image that is superimposed on said three-dimensional volumetric display.” In this regard, the Office Action cites several large sections of Tsao, e.g., col. 3 line 19 to col. 4, line 40 and col. 5, lines 1-44. Applicant has reviewed these sections of Tsao, but finds that they only teach “a set of 2D image frames 14a, projected from the image projector onto the moving screen for displaying.” (Col. 3, lines 21-23). “By sweeping the screen across the space periodically and rapidly, and sequentially project onto the screen a series of 2D image frames, e.g. the profiles of an auto-body 14a in FIG. 1, the set of 2D image frames can thereby be distributed and displayed over the display space, with each frame located at a specific position in the space. This set of 2D image frames, when viewed from outside the display space, forms a 3D volumetric image.” (Col. 3, lines 34-42).

Nowhere does Tsao teach or suggest projecting an additional two-dimensional image that is superimposed on the three-dimensional image being displayed as claimed. “A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See

M.P.E.P. § 2131. Therefore, for at least this reason, the rejection of claim 18 based on Tsao should be reconsidered and withdrawn.

For the foregoing reasons, the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of the application in light of these remarks is courteously solicited. If any fees are owed in connection with this paper which have not been elsewhere authorized, authorization is hereby given to charge those fees to Deposit Account 18-0013 in the name of Rader, Fishman & Grauer PLLC. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,



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DATE: 26 February 2004

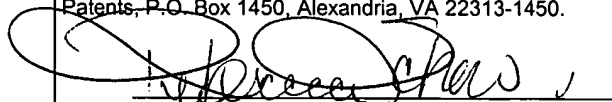
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DATE OF DEPOSIT: **February 26, 2004**

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail, on the date indicated above in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



Rebecca R. Schow